

# **TH-Series handheld thermal camera**

## **User reference**

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A series of overlapping, wavy, horizontal lines in shades of gray and black, flowing from the left side of the page towards the right, positioned above the Raymarine logo.

**Raymarine®**

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## Export control

TH-Series thermal cameras are controlled by US export laws. Authorization by the U.S. Government must be obtained prior to export outside the United States.

There may be versions of the system that are approved for international distribution and travel. Please contact Raymarine customer support if you have any questions.

Contact details can be found on the Raymarine website, [www.raymarine.com](http://www.raymarine.com).

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## Important Safety Instructions

- Read and follow these instructions.
- Heed all warnings.
- Only use the attachments / accessories specified by the manufacturer.

### Caution!

Danger of explosion if battery is incorrectly replaced. return the equipment to the manufacturer for battery replacement.

The battery used in this device may present a risk of fire or chemical burn if mistreated. Do not disassemble the camera, store above 60°C, or incinerate. The battery is factory replaceable only and must be replaced with the identical battery pack.

### Caution!

Do NOT open the unit.

The unit is factory sealed to protect against atmospheric humidity, suspended particulates and other contaminants. It is important that you do not open the unit or remove the casing for any reason.

Opening the unit will:

- Compromise the seal with possible damage to the unit; and
- Void the manufacturer's warranty.

### Caution!

Service and Maintenance.

This product contains no user serviceable components. Please refer all maintenance and repair to authorized Raymarine dealers. Unauthorized repair may affect your warranty.

# 1 Introduction

The TH-Series handheld thermal camera enables you to see easily in low-light conditions or even total darkness.

Typical uses for TH-Series cameras include:

- When you have the TH-Series camera on deck, at night in dark anchorages you will be able to see your surroundings, even when it is cloudy and there is no moonlight or starlight.
- See clearly in total darkness—unlike other night vision systems, TH-Series cameras require no light at all.
- See logs, rocks, land, and other hazards that radar can miss.
- Navigate with confidence at night knowing that you can see harbor entrances and waterways in total darkness.



Visible Image



TH-Series Camera Image

## 1-1 TH-Series Camera Features



- Rugged design — built to withstand the demands of outdoor use.
- 240×180 or 320×240 resolution microbolometer sensor for excellent image quality and clarity.
- 19 mm lens with 24° field of view.
- Palm-sized portability and lightweight — only 12 oz. (340 g).
- Embedded LED tasklight.
- USB cable for battery charging.
- Rechargeable internal Li-Ion battery — provides up to 5 hours of camera operation on a single charge.

### Caution!

Do not disassemble the camera enclosure. Disassembly can cause permanent damage and will void the warranty.

Do not point the camera directly at extremely high-intensity radiation sources, such as the sun, lasers, arc welders, etc.

Be careful not to leave fingerprints on the camera's infrared optics. Clean only with low pressure fresh water and a lens cloth.

## 2 Getting Started

The TH-Series camera is available with the features, options, and accessories described in this manual.

Refer to the packing list enclosed with your camera shipment to determine the actual contents of your camera package.

- **TH24 and TH32 Cameras**

In addition to the camera, Quick Start card, and Documentation CD, the following items are included in the camera package:



- **TH24 and TH32 Camera Options**

The following optional accessories are available for the TH-Series camera

Floating Lanyard



Camera Carrying Pouch



Hard Shell Storage Case



## 3 Operating Your TH-Series Camera

### 3-1 Camera Features and Controls



## 3-2 Charging the Camera

The battery in the camera should be fully charged prior to use.

To charge the camera, lift the cover from the USB port, plug in the USB cable provided with the camera, and also plug it into a USB power source.

- When charging correctly, the charging indicator will be lit yellow.
- When fully charged, the charging indicator will light solid green. The initial charge time is approximately 4 hours.



Plug in USB Charger



Charging indicator yellow when charging

Charging indicator green when fully charged



### 3-3 TH-Series Power Management

Your TH-Series camera is equipped with a power management system that provides up to five hours of continuous operation. When left in the Off state the battery will hold a charge for up to two months. To make the best use of the camera it is important to understand the basic power states of the camera.

- When the camera is turned on from the Off state, it takes about four seconds to become operational. During the Bootup process, The splash screen is shown and then the software version is displayed briefly. Pressing the Power button will toggle the camera between On and Off.
- The camera shuts down after about five minutes if no buttons are pushed. **Auto shutdown 30s**, is shown in the display, and after counting down for 30 seconds the camera will shutdown.

Camera State	How do you know?
Off	The display is off, the camera buttons are dark, and the LED Tasklight comes on when the Brightness button is pressed.
On	The display is on, the camera buttons are back-lighted, and the LED Tasklight is disabled.

### 3-4 Buttons and Controls

#### Power Button

Turn the camera On and Off.



#### Display Brightness Button

Use this button to cycle through the five levels of display brightness. Each press of the button advances to the next level of brightness.



When the highest brightness level is reached, subsequent button presses advance to the next lower brightness levels. When the lowest brightness level is reached, subsequent button presses advance to the next higher brightness level. One of the following icons is displayed for approximately three seconds after the button is pressed indicating the current brightness level:



### Note

When the TH-Series camera is powered Off, the Display Brightness button, when held on, turns on the LED Tasklight.

### White Hot/Black Hot/Marine Red Button

Use this button to toggle between the three video palettes. In the default White Hot palette, hotter objects appear as white or light grey. In Black Hot, hotter objects appear as black or dark grey. The Marine Red palette is based on the White Hot pallet, but the hottest objects in the scene are red to help maintain normal night vision.



While white hot is the most commonly used and visually intuitive method of viewing thermal imagery; black hot can often enhance contrast of certain objects or provide better visual perspective in some conditions. When switching between palettes, the appropriate icon is displayed for approximately 3 seconds.



## Zoom Button—TH32 models only

Use this button to switch the camera between no zoom (full resolution) and 2× zoom. The central part of the image is magnified twice its normal size when 2× is selected.



When zoom has been selected the icon is continuously shown in the display:



## Freeze Frame Button—TH24 models only

Use this button to freeze the video so that a single frame may be inspected closely.



## Diopter Controls



The diopter adjustment lever allows a  $\pm 2$  diopter setting range. When the diopter adjustment lever is pointing straight away from the camera, it is in the neutral position. Adjust the diopter setting for the sharpest image in the viewfinder.

## 3-5 Battery

Your TH-Series camera is equipped with a sophisticated power system using a rechargeable internal Li-Ion battery.

### Battery Status Indicator

While the camera is On, a battery status indicator is always shown in the corner of the display image. This indicator provides an estimation of the remaining battery charge.



full charge



half charge



plugged in

## 3-6 Auto Shutdown Operation

Auto Shutdown is a feature of the TH-Series camera that helps to guard against draining the battery prematurely by inadvertently leaving the camera on. Auto Shutdown turns the camera off if the following conditions are met:

- The camera is On
- No buttons have been pressed for about five minutes.

Once these conditions are met you will see the following message in the display: **Auto shutdown 30s**, and after counting down for 30 seconds the camera will shutdown.

Press any button during this countdown to terminate Auto Shutdown and resume normal operation.

### Note

Pressing any button during an Auto Shutdown countdown will only terminate the countdown and abort the shutdown. The normal function of the button will not occur.

## 4 Technical Data

### 4-1 TH-Series Model Features

The TH-Series cameras are available with either NTSC or PAL video output format.

Scout Model	
TH24	TH-Series Handheld Thermal Camera with video resolution of 240 × 180 pixels
TH32	TH-Series Handheld Thermal Camera with video resolution of 320 × 240 pixels with 2× digital electronic zoom.
Included with all camera models	Lens Cover, USB Cable, Wrist Strap, Operator's Manual, and Soft Carrying Pouch
Feature	
Start up from stand-by	<5 seconds
Thermal Sensitivity, Waveband	<50 mK @ f/1.0, 7.5 - 13.5 μm
Detector Type	VOx Microbolometer
Resolution	240 × 180 pixels TH24
	320 × 240 pixels TH32
Image Processing	FLIR Proprietary Digital Detail Enhancement
Focus, Zoom	Fixed focus. 2× electronic zoom on applicable models only.
Video Display	NTSC 7.5 Hz refresh rate

### 4-2 Power

Battery Types	Internal Li-Ion
Battery Life Operating	Approximately 5 Hours at room temperature

## 4-3 Environmental

	TH24 and TH24
Operational Temp.	-4°F to 122°F (-20°C to 50°C)
Storage Temp.	-40°F to 140°F (-40°C to 60°C)
Ratings	IP-67, 1 meter drop

## 4-4 Physical

TH24, TH32	
Weight	12 oz. (340 g) with battery
Size (L × W × H)	6.70" × 2.31" × 2.44" (172 × 58.7 × 62 mm)

## 4-5 Lens Choice

TH24, TH32	
FOV	24° × 18°

## 4-6 Range Detection<sup>1</sup>

Detect Man (1.8 m × 0.5 m)	
TH24	350 yd. (320 m)
TH32	500 yd. (450 m)

1. Actual range may vary depending on camera set-up, environmental conditions, and user experience.

## Owner notes



[www.raymarine.com](http://www.raymarine.com)

